

ABSTRACT OF THE DISCLOSURE

A method of manufacturing a semiconductor device has the steps of: (a) evacuating a sputtering chamber to a pressure of 1.5×10^{-8} torr to 9×10^{-8} torr and heating a silicon substrate to a temperature of 330 °C to 395 °C; (b) 5 sputtering Co on the heated silicon substrate; (c) after the step (b), forming a cap layer having a small oxygen transmission performance on the silicon substrate without exposing the silicon substrate in air; (d) after the step (c), performing primary annealing; (e) after the step (d), removing the cap layer and unreacted Co; and (f) after the step (e), performing secondary annealing by heating the 10 silicon substrate to a temperature of 450 °C to 750 °C.